Early Journal Content on JSTOR, Free to Anyone in the World

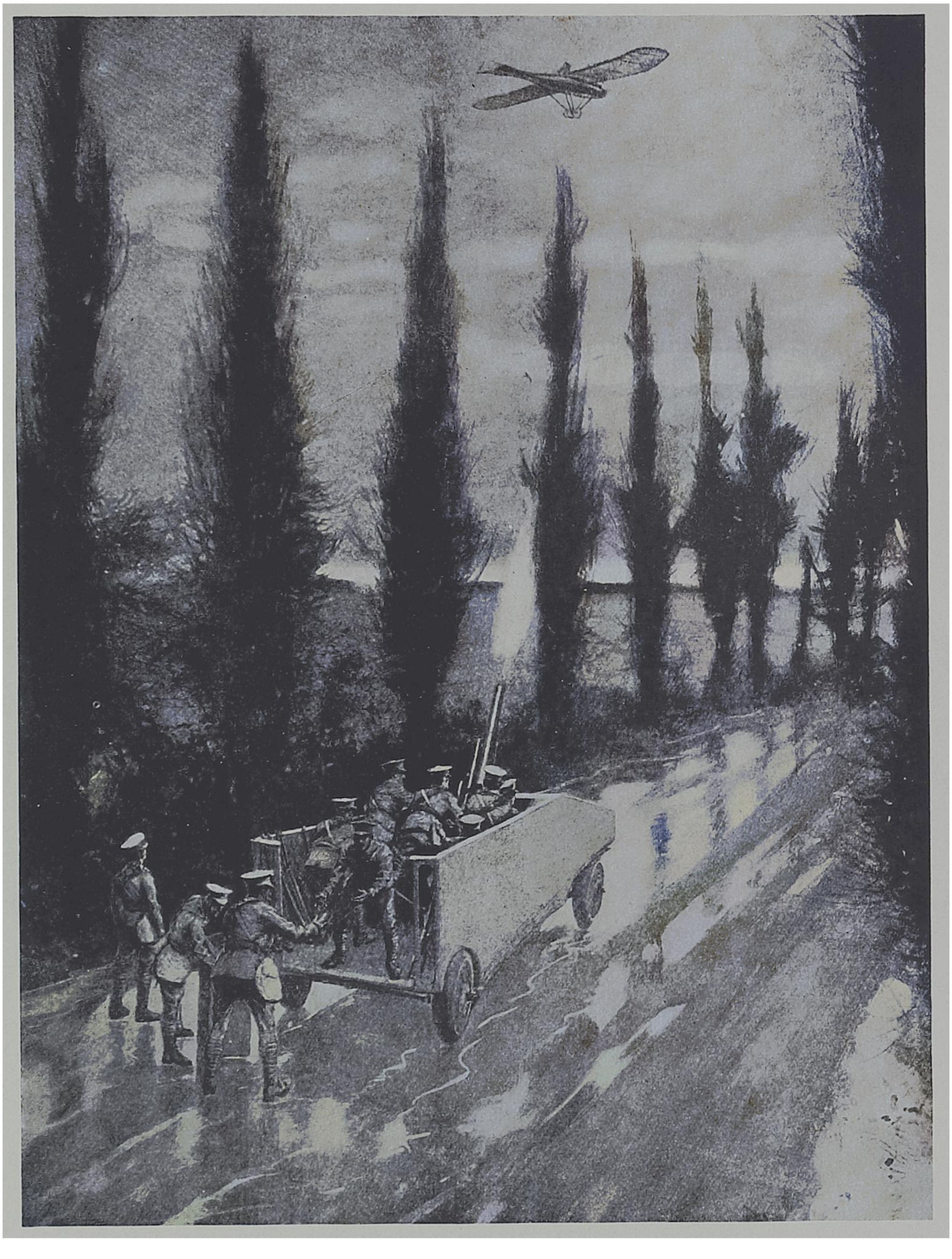
This article is one of nearly 500,000 scholarly works digitized and made freely available to everyone in the world by JSTOR.

Known as the Early Journal Content, this set of works include research articles, news, letters, and other writings published in more than 200 of the oldest leading academic journals. The works date from the mid-seventeenth to the early twentieth centuries.

We encourage people to read and share the Early Journal Content openly and to tell others that this resource exists. People may post this content online or redistribute in any way for non-commercial purposes.

Read more about Early Journal Content at http://about.jstor.org/participate-jstor/individuals/early-journal-content.

JSTOR is a digital library of academic journals, books, and primary source objects. JSTOR helps people discover, use, and build upon a wide range of content through a powerful research and teaching platform, and preserves this content for future generations. JSTOR is part of ITHAKA, a not-for-profit organization that also includes Ithaka S+R and Portico. For more information about JSTOR, please contact support@jstor.org.



The Anti-Aircraft Corps in Action
"Winging" an Aeroplane

THE AUTOMOBILE IN WAR

IT is well understood now that Paris would have fallen in the first weeks of the war, but for the automobile. The Army of Paris was converted into a field army and brought to the firing line for the battle of the Marne, by the requisitioning of every automobile in Paris—private cars, taxis, auto-busses. The automobile also has played a great part in transporting supplies for the armies of the various belligerents, in the quick shifting of troops and in the hospital service. In all these details of warfare it has practically wrought a revolution.

This revolution, even where foreseen, had been inadequately provided for, although all the great military Powers had endeavoured in some measure to encourage the construction of vehicles suitable for transport and supply under active service conditions, the method adopted, wherever possible, having been to offer a subsidy or subvention to the purchaser and user of any machine of a type passed as suitable by the Government's experts.

In France, annual trials had been held for some time past under the auspices of the War Department. As a result of these trials, certain types and makes of vehicle had been certificated for subsidy. The expenditure involved by putting this scheme into force in France amounted to an aggregate of about $1,500 per vehicle, paid in instalments over a period of four years. In Germany, natural and trade conditions being more unfavourable, the subsidy offered amounted to no less than about $2,550 for each vehicle, paid in instalments spread over five years. German manufacturers depended upon these particular models, and upon their export trade, instead of on any natural increasing demand for purely commercial machines for use within their own country. Austria paid a subsidy amounting to about $1,800.

All these figures are from continental countries, yet in these the aggregate supply of vehicles in industrial service was less than the military demand taken alone. In Great Britain, this state of affairs was reversed. But while, at the outbreak of war, the British Government had at its immediate disposal vehicles more than ample numerically, it could not form automobile fleets by any means perfect as regards uniformity and standardisation.

At the outbreak of war, however, none of the Governments concerned could limit themselves to the requisitioning of vehicles of definite types, but were compelled to commandeer any presumably sound machine of fairly suitable carrying capacity; a great drawback, since with a fleet made up of vehicles of all makes and types, the difficulties of maintaining it in service are immeasurably increased. Each separate type of vehicle must be supported by a supply of spare parts suitable for employment in the event of breakdown. Moreover, the use of mixed fleets necessitates the employment of a staff much larger than if the cars were of uniform type.

The second important consequence of the conditions obtaining at the outbreak of war was that the Governments of all the belligerent countries were compelled to make prompt endeavours to arrange for a continuous and large supply of new vehicles either from works within their own country, or else by import. In France, all the suitable motor factories were completely mobilised, and the duties for which they were best fitted promptly assigned to them. It may be assumed that the same was done in Germany. The action taken in Great Britain was to some extent similar, but naturally, under a system of voluntary service, did not involve the enlistment of the men continuing to be employed in the factories. Yet, for a time, Great Britain was in the position of supplying its own immediate needs, and assisting to make good those of all its allies. Soon, however, the strain became too great. First the Russian and Belgian Governments, then the French, and lastly the British themselves supplemented the fleets immediately obtainable by placing large orders with manufacturers in our country. In the aggregate, tremendous impetus has been given to American builders especially of industrial motor vehicles. There is little doubt that at the conclusion of the war the output of our automobile works will be enormously greater in proportion to the European output than it was in the summer of 1914. While these statements apply mainly to the heavier class of motor vehicle designed originally for the carriage of goods or for public service work, neither the touring car nor the motor cycle industries have remained unaffected, since the principal uses, to which motor vehicles are put in time of war, include all types.

The transport and supply columns which link up the railhead with the distributing points in the immediate neighbourhood of the front are now formed entirely of motor vehicles. The general type selected is a lorry capable of carrying a load of about three tons, at a maximum speed somewhat over twenty miles per hour. Such a fleet of one hundred motor lorries, at half speed in convoy, can in the course of four hours bring up three hundred tons of supplies to the front from a railhead forty miles distant. The length of such a convoy would be not more than half that of a horsed convoy dealing with an equal aggregate load. This in itself is an assistance towards keeping clear the main traffic arteries behind the army in the field, though the speed capacity is a still more important factor. A horsed convoy could not, of course, operate daily over a distance of forty miles, carrying its load and returning empty. To perform the work with animal traction would mean perhaps three relays linking up the railhead with refilling points. One motor convoy will thus do the work of at least three horsed relays, each of double its length, the congestion on the road being reduced to one-sixth; and in the event of a retreat, congestion upon the roads may very well convert a temporary set-back into a decisive defeat, while in the event of a rapid advance, horsed vehicles are incapable of gaining quickly upon the troops in movement, with the inevitable consequence that ammunition and food supplies cannot be brought up punctually and regularly. The time taken by a motor convoy in gaining upon infantry a distance equal to a full day's march is only a matter of a couple of hours or so. The presence of motor convoys makes it possible to supply troops with fresh meat and bread in place of tinned and preserved provisions. In bringing up ammunition the advantages of the motor show themselves firstly in the reduction of congestion, secondly in the ability to make good in the shortest possible time any temporary tendency towards a failure of supplies at any point along the front.

Without going into details as to the various stages through which it is necessary to pass before a wounded man is actually handed over to the care of a fully-equipped hospital, it is sufficiently evident that a new difficulty arises whenever troops are operating at a long distance from their railhead, the only satisfactory method of overcoming this difficulty lies in the use of motor ambulances.

The type of vehicle usually employed for this purpose is constructed upon a touring-car chassis of moderate power and rather unusually long wheelbase. It is, in general, advisable that the rear springs of the chassis should be strengthened; but, with these two exceptions, standard models are suitable for ambulance work.

Armored Motor Car in Action. Surprising a Party of Uhlans

The employment of motor vehicles in the interests of the wounded does not stop at the provision of ambulances. Auxiliary to the main fleet are a number of cars equipped as soup kitchens, fitted with boilers but not with ovens; and intended to operate along the routes over which the ambulances travel from the front to the hospitals, and to provide liquid nourishment, which in many cases must be urgently needed by the wounded. Then, again, there are cars fitted up as travelling bathrooms; others as bacteriological laboratories; others again with X-ray apparatus, and others as small operating theatres. This last idea has been extended by the French, who employ small convoys of motor cars capable of carrying rapidly, from point to point, the whole equipment which goes to form an operating theatre of considerable capacity.

Among the heavier types of vehicles must be classed the motor omnibuses and chars-à-banc, that are so extensively employed for the rapid movement of troops, where direct railway facilities are not available, the armoured cars and automobile artillery. Ordinary touring cars of the better class are of course extensively used for staff purposes; and there are various other uses—observation, wireless telegraphy, etc.

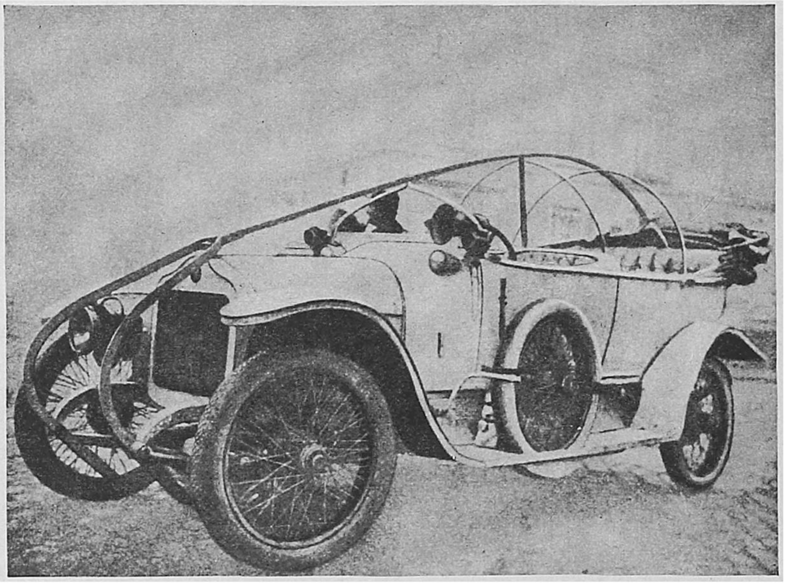
When all the needs of these various services have been met, there still remains much to do. All the vehicles are required to work under exceptionally arduous conditions.

The system of maintenance by travelling workshop has on the whole worked out very well, but the limitations of the method are obvious, and consequently it has been necessary to establish also large stationary workships at certain convenient bases. Yet smooth working of the complete system is a matter of considerable difficulty. There must be a tendency on the part of those responsible for running the permanent base workshops towards justifying themselves by dealing adequately with the largest possible percentage of the cars that are sent in. In the event of a very bad breakdown, it may sometimes be advisable not to attempt to repair, but to use the remaining portions of the car as spare parts for other vehicles. In dealing with vehicles of obsolete type, the question must always arise whether it is not better to discard the machine altogether than to hinder the output of new vehicles by demanding from the manufacturers replacements for whose manufacture facilities no longer exist.

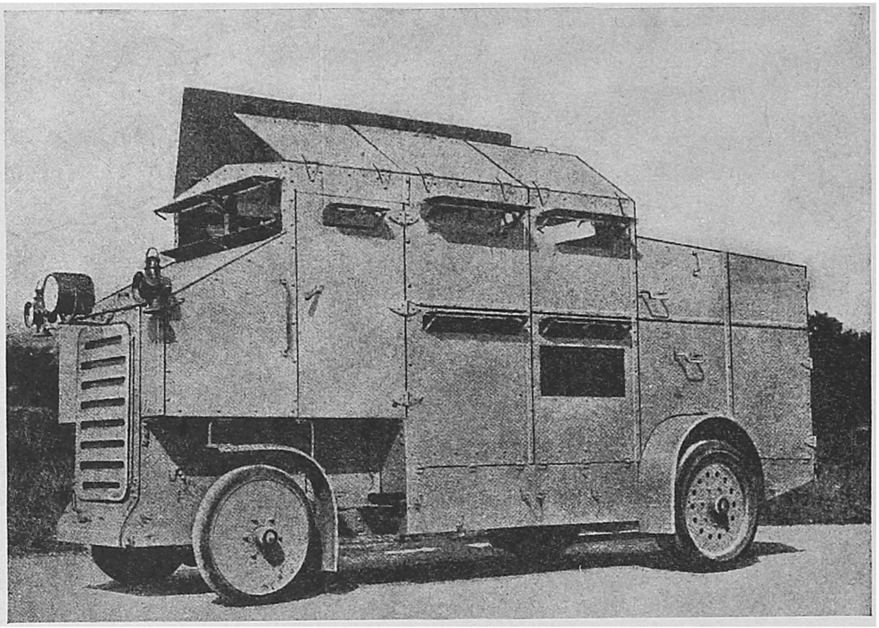
At the first Plattsburg camp this summer a motor machine gun outfit proved one of the most valuable features of the encampment. A writer in *The Sun* (N. Y.) discussing the work of this detachment calls attention to the fact that in the United States army, as in most other armies prior to the war in Europe, two machine guns were considered sufficient for each regiment. Some military authorities now believe there should be at least twenty-four machine guns to each regiment. It is also essential to efficient service that these weapons, with their crews and ammunition and equipment, shall be susceptible of rapid movement for considerable distances.

As a matter of fact, in the United States army machine guns are packed on the backs of horses and mules. The maximum mobility that can thus be counted upon is twenty-five miles a day, and by sustained effort fifty miles would take more nearly three than two days, especially if the going were somewhat rough or slippery. By transporting the guns, crews and ammunition in automobiles twenty-five miles could be negotiated in an hour, and twice that distance, even with the roads cut up, could be covered inside of three hours.

Because of lack of funds neither the regular army nor the National Guard has experimented with motor transported machine gun units; and it was to gain at first hand knowledge of this



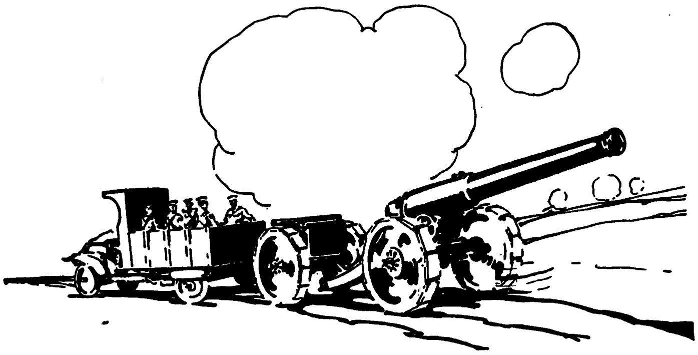
Automobile Designed to Demolish Barbed Wire. Should the Car Come in Contact With Wire Obstructions on the Road, the Wire is Cleanly Severed on the Edge of the Bar Over the Top of the Car



Man-o'-War-o'-the-Road. A Mobile Fortress, Typical of Modern Warfare, Which Shifts Guns of the Largest Calibre From Point to Point new combination that the motor machine gun detachment was organized for the Plattsburg camp. It was paid for by private individuals, the necessary funds being contributed by Judge Gary of the United States Steel Corporation, George W. Perkins, J. P. Morgan, Brown Brothers & Co., Potter, Choate & Prentice, and White, Weld & Co. But notwithstanding the financial help given by business men, the experiment could hardly have been carried through without the assistance of the motor car manufacturers, who furnished cars and drivers gratis.

In final organization the detachment consisted of fifteen motor cars and two motor cycles. They included a searchlight car, a motor ambulance, military transport cars and several trucks equipped with guns, and there was one fully armored car with revolving gun turret.

As a result of the motor machine gun detail at the Plattsburg camp for business and professional men some of the members of that experimental unit have already begun the organization of similar detachments, and there is good reason to believe that this movement will spread rapidly among car owners and their friends. Either the National Government or the State authorities can lend a helping hand in promoting the creation of these detachments. It is asserted that no lesson of greater value was developed at Plattsburg than the potential military usefulness of the motor truck and other cars when employed either for the transportation of troops or for the carriage of machine guns. We know now what we did not know before, the limitations and the possibilities of such vehicles, together with the facility with which they can be made fit for special service should war threaten.



Automobile for Moving Heavy Siege Artillery